

## **Abstract**

An energy management system operable in three modes of operation including a driving mode to drive a vehicle drive shaft (110), a retarding mode to retard the vehicle drive shaft and a neutral mode to have no driving or retarding influence on the vehicle drive shaft. The system comprises an energy accumulator (100, 101) operable to store and release energy through receipt and release of fluid, a pump (104) having a pump drive shaft and being in fluid communication with the energy accumulator, a reservoir (107) of fluid in communication with the pump, and a coupler adapted to couple the pump to the vehicle drive shaft. In the retarding mode, the vehicle drive shaft drives the pump to pump fluid to the energy accumulator. In the driving mode, the energy accumulator releases fluid to drive the pump which drives the vehicle drive shaft. In the neutral mode, the pump is inoperative to exert any driving or retarding influence on the vehicle drive shaft. The system further includes at least one sensor adapted to provide input signals indicative of selected system parameters including vehicle ground speed, and a controller incorporating a microprocessor adapted to regulate the modes of operation of the pump and the accumulator in response to the input signals.